



SEQUENCE LISTING

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DOUCET, CHARLOTTE J.

<120> CARROT ANTIFREEZE POLYPEPTIDES

<130> F7371(C)

<140> 09/308,140

<141> 1999-12-30

<150> PCT/EP97/06181

<151> 1997-11-06

<150> EP 96308362.1

<151> 1996-11-19

<160> 12

<170> PatentIn Ver. 2.1

<210> 1

<211> 7

<212> PRT

<213> Daucus carota

<400> 1

Leu Pro Asn Leu Phe Gly Lys

1

5

<210> 2

<211> 9

<212> PRT

<213> Daucus carota

<400> 2

Ile Pro Glu Glu Ile Ser Ala Leu Lys

1

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<210> 3

<211> 10

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<220>

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<222> (3)

<223> any, other or unknown amino acid

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Leu Thr Xaa Leu Asp Leu Ser Phe Asn Lys

1

5

10

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 <213> Daucus carota

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 <223> any, other or unknown amino acid

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Phe Pro Gln Leu Xaa Lys
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 <223> Xaa represents any, other or unknown amino acid

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ttc ctc tgc ctt cca aac ctc tct gca tca caa aga tgc aac aac aac 96
 Phe Leu Cys Leu Pro Asn Leu Ser Ala Ser Gln Arg Cys Asn Asn Asn
 20 25 30

gac aag caa gct tta ctc caa atc aaa aca gcc ttg aaa aac ccc acc 144
 Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr
 35 40 45

att aca gac tca tgg gtg tca gac gac gat tgt tgt ggt tgg gac cta 192
 Ile Thr Asp Ser Trp Val Ser Asp Asp Asp Cys Cys Gly Trp Asp Leu
 50 55 60

gtc gaa tgt gac gaa acc agc aac cgc ata att tcc ctc ata att caa 240
 Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln
 65 70 75 80

 gac gac gaa gct ctc acc ggc caa atc cca cct cag gtg gga gac cta 288
 Asp Asp Glu Ala Leu Thr Gly Gln Ile Pro Pro Gln Val Gly Asp Leu
 85 90 95

 cca tac ctc caa gcc tta tgg ttc cgt aaa ctc ccc aat ctt ttc gga 336
 Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly
 100 105 110

 aaa atc cca gaa gaa att tct gca ctc aaa gac cta aaa tcc ctc aga 384
 Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg
 115 120 125

 ctc agc tcg acc agt ctc agt ggc cct gtc cct tta ttc ttc cct cag 432
 Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln
 130 135 140

 ctt acg aaa cta act tgt tta gac tta tcg ttt aac aaa ctt ttg ggt 480
 Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly
 145 150 155 160

 gta atc cct cct cag ctt tcc act ctt ccg aac ctt aaa gcc ctg cac 528
 Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His
 165 170 175

 tta gaa cgt aac gaa ctc acc ggt gaa atc ccc gat atc ttt ggg aat 576
 Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn
 180 185 190

 ttt gct gga tcc ccg gac ata tat ctt tcg cat aac cag ctc acc ggg 624
 Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly
 195 200 205

 ttt gtt ccc aaa act ttt gct aga gca gat cca att agg ctc gac ttc 672
 Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe
 210 215 220

 tca ggg aac aga cta gaa ggt gat att tca ttc ttg ttt ggg cct aaa 720
 Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys
 225 230 235 240

 aaa cgc ttg gaa atg cta gat ttt tca gga aac gtg ctt agt ttc aat 768
 Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn
 245 250 255

 ttc tcc agg gtg cag gag ttt cca ccc tct ttg aca tac tta gac ttg 816
 Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu
 260 265 270

 aac cat aac cag atc agc gga agt ctg tcg agt gaa ttg gct aaa ttg 864
 Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu
 275 280 285

gac ctg cag aca ttt aac gtc agt gat aat aat ctc tgc ggc aag att 912
 Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile
 290 295 300

cca aca ggg gga aac ctc cag aga ttc gac cgt acg gcc tat ctc cac 960
 Pro Thr Gly Gly Asn Leu Gln Arg Phe Asp Arg Thr Ala Tyr Leu His
 305 310 315 320

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<213> Daucus carota

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20 25 30

Asp Lys Gln Ala Leu Leu Gln Ile Lys Thr Ala Leu Lys Asn Pro Thr
35 40 45

Ile Thr Asp Ser Trp Val Ser Asp Asp Cys Cys Gly Trp Asp Leu
50 55 60

Val Glu Cys Asp Glu Thr Ser Asn Arg Ile Ile Ser Leu Ile Ile Gln
65 70 75 80

Asp Asp Glu Ala | Leu Thr Gly Gln Ile Pro Pro Gln | Val Gly Asp Leu
85 90 95

Pro Tyr Leu Gln Ala Leu Trp Phe Arg Lys Leu Pro Asn Leu Phe Gly
100 105 110

Lys Ile Pro Glu Glu Ile Ser Ala Leu Lys Asp Leu Lys Ser Leu Arg
115 120 125

Leu Ser Ser Thr Ser Leu Ser Gly Pro Val Pro Leu Phe Phe Pro Gln
130 135 140

Leu Thr Lys Leu Thr Cys Leu Asp Leu Ser Phe Asn Lys Leu Leu Gly
145 150 155 160

Val Ile Pro Pro Gln Leu Ser Thr Leu Pro Asn Leu Lys Ala Leu His
165 170 175

Leu Glu Arg Asn Glu Leu Thr Gly Glu Ile Pro Asp Ile Phe Gly Asn
180 185 190

Phe Ala Gly Ser Pro Asp Ile Tyr Leu Ser His Asn Gln Leu Thr Gly
195 200 205

Phe Val Pro Lys Thr Phe Ala Arg Ala Asp Pro Ile Arg Leu Asp Phe
 210 215 220

Ser Gly Asn Arg Leu Glu Gly Asp Ile Ser Phe Leu Phe Gly Pro Lys
 225 230 235 240

Lys Arg Leu Glu Met Leu Asp Phe Ser Gly Asn Val Leu Ser Phe Asn
 245 250 255

Phe Ser Arg Val Gln Glu Phe Pro Pro Ser Leu Thr Tyr Leu Asp Leu
 260 265 270

Asn His Asn Gln Ile Ser Gly Ser Leu Ser Ser Glu Leu Ala Lys Leu
 275 280 285

Asp Leu Gln Thr Phe Asn Val Ser Asp Asn Asn Leu Cys Gly Lys Ile
 290 295 300

Pro Thr Gly Gly Asn Leu Gln Arg Phe Asp Arg Thr Ala Tyr Leu His
 305 310 315 320

Asn Ser Cys Leu Cys Gly Ala Pro Leu Pro Glu Cys
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<212> PRT

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Gly Pro Val Pro Leu Phe Phe Pro
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<210> 9

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<212> DNA

<213> Daucus carota

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<222> (1)..(23)

<223> "n" represents inosine

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23

<210> 10

<211> 32

<212> DNA

<213> Daucus carota

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gagagaggat cctcgagttt ttttttttt tt

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 1 5 10 15

gac tta tcg ttt aac aaa ctt ttg ggt	gta atc cct cct cag ctt tcc	96
Asp Leu Ser Phe Asn Lys Leu Leu Gly	Val Ile Pro Pro Gln Leu Ser	
20	25	30

act ctt ccg aac ctt aaa gcc ctg cac tta gaa cgt aac gaa ctc acc 144
Thr Leu Pro Asn Leu Lys Ala Leu His Leu Glu Arg Asn Glu Leu Thr
35 40 45

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ggg gaa atc ccc gat atc ttt ggg aat ttt gct gga tcc ccg gac ata 192
Gly Glu Ile Pro Asp Ile Phe Gly Asn Phe Ala Gly Ser Pro Asp Ile
      50          55          60

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tat ctt tcg cat aac cag ctc acc ggg ttt gtt ccc aaa act ttt gct 240
 Tyr Leu Ser His Asn Gln Leu Thr Gly Phe Val Pro Lys Thr Phe Ala
 65 70 75 80

aga gca gat cca att agg ctc gac ttc tca ggg aac aga cta gaa ggt 288
Arg Ala Asp Pro Ile Arg Leu Asp Phe Ser Gly Asn Arg Leu Glu Gly
85 90 95

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gat att tca ttc ttg ttt ggg cct aaa aaa cgc ttg gaa atg cta gat 336
Asp Ile Ser Phe Leu Phe Gly Pro Lys Lys Arg Leu Glu Met Leu Asp
          100           105           110

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ttt tca gga aac gtg ctt agt ttc aat ttc tcc agg gtg cag gag ttt 384
 Phe Ser Gly Asn Val Leu Ser Phe Asn Phe Ser Arg Val Gln Glu Phe
 115 120 125

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cca ccc tct ttg aca tac tta gac ttg aac cat aac cag atc agc gga 432
Pro Pro Ser Leu Thr Tyr Leu Asp Leu Asn His Asn Gln Ile Ser Gly
          130           135           140

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agt ctg tcg agt gaa ttg gct aaa ttg gac ctg cag aca ttt aac gtc 480
Ser Leu Ser Ser Glu Leu Ala Lys Leu Asp Leu Gln Thr Phe Asn Val
145           150           155           160

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agt gat aat aat ctc tgc ggc aag att cca aca ggg gga aac ctc cag 528
 Ser Asp Asn Asn Leu Cys Gly Lys Ile Pro Thr Gly Gly Asn Leu Gln
 165 170 175

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aga ttc gac cgt acg gcc tat ctc cac aac agt tgc ttg tgt ggt gct 576
Arg Phe Asp Arg Thr Ala Tyr Leu His Asn Ser Cys Leu Cys Gly Ala
          180           185           190

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cca ttg cca gaa tgc tagttaccat gcaaaaatgtg ccttaagggtt atctttgtaa 631
 Pro Leu Pro Glu Cys
 195

tgagatatat tatgcagctc aaggcagagc aataagttt cctaatttgt tatagttaaga 691
 tattattgtat tttcacagaa agtgtctact aggattcgta atatattata attgctcata 751
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 20 25 30

Thr Leu Pro Asn Leu Lys Ala Leu His Leu Glu Arg Asn Glu Leu Thr
 35 40 45

Gly Glu Ile Pro Asp Ile Phe Gly Asn Phe Ala Gly Ser Pro Asp Ile
 50 55 60

Tyr Leu Ser His Asn Gln Leu Thr Gly Phe Val Pro Lys Thr Phe Ala
 65 70 75 80

Arg Ala Asp Pro Ile Arg Leu Asp Phe Ser Gly Asn Arg Leu Glu Gly
 85 90 95

Asp Ile Ser Phe Leu Phe Gly Pro Lys Lys Arg Leu Glu Met Leu Asp
 100 105 110

Phe Ser Gly Asn Val Leu Ser Phe Asn Phe Ser Arg Val Gln Glu Phe
 115 120 125

Pro Pro Ser Leu Thr Tyr Leu Asp Leu Asn His Asn Gln Ile Ser Gly
 130 135 140

Ser Leu Ser Ser Glu Leu Ala Lys Leu Asp Leu Gln Thr Phe Asn Val
 145 150 155 160

Ser Asp Asn Asn Leu Cys Gly Lys Ile Pro Thr Gly Gly Asn Leu Gln
 165 170 175

Arg Phe Asp Arg Thr Ala Tyr Leu His Asn Ser Cys Leu Cys Gly Ala
 180 185 190

Pro Leu Pro Glu Cys
 195